STATEMENT OF BASIS

GSA VEHICLE MAINTENANCE FACILITY SWMU 13
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
KENNEDY SPACE CENTER
BREVARD COUNTY, FLORIDA

PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed to inform and give the public an opportunity to comment on a proposed remedy to clean up contamination at the GSA Vehicle Maintenance Facility (GSA VMF) [1]. A Kennedy Space Center (KSC) Remediation Team consisting of National Aeronautics and Space Administration (NASA), United States Environmental Protection Agency (EPA), and Florida Department of Environmental Protection (FDEP) has determined that the proposed remedy is cost effective and protective of human health and the environment. However, prior to implementation of the proposed remedy, the KSC Remediation Team would like to give an opportunity for the public to comment on the proposed remedy. At any time during the public comment period, the public may comment as explained in the "How Do You Participate" section of this SB. After the end of the public comment period, the KSC Remediation Team will review all comments and issues raised in the comments and determine if there is a need to modify the proposed remedy prior to implementation.

WHY IS A REMEDY NEEDED?

The results of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) indicated that metals and several polynuclear aromatic hydrocarbons (PAHs) listed on Table 1 are present in soil and swale soil, which could potentially be harmful to human health. Groundwater issues associated with this site are being addressed under activities for the Communications, Maintenance, and Storage Facility (SWMU 82).

HOW DO YOU PARTICIPATE?

The KSC Remediation Team solicits public review and comment on this SB before implementing the proposed remedy. The remedy for the GSA VMF site will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) Permit for Kennedy Space Center (KSC).

The Cleanup Remedy

The proposed cleanup remedy for GSA VMF site includes the following components:

- Implementation of institutional controls to prohibit residential exposure to site surface soils.
- Implementation of institutional controls to maintain site swales to comply with the grounds maintenance worker scenarios.
- Transfer of groundwater issues to the Communications, Maintenance, and Storage Facility (SWMU 82).

The public comment period for this SB and proposed remedy will begin on the date of publication for notice of availability of the SB in major local newspapers of general circulation and end 45 days thereafter. If requested during the comment period, the KSC Remediation Team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy.

1. *In accordance with RCRA §7004(b), this Statement of Basis summarizes the proposed remedy for the GSA Vehicle Maintenance Facility (GSA VMF) site. For detailed information on the site, consult the GSA VMF RFI Report, which is available for review at the information repository located at the NASA Document Library, North Brevard Library, 2121 South Hopkins Avenue, Titusville, FL 32780, telephone: (321) 264-5026.*

To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

Mr. John Armstrong
FDEP - Bureau of Waste Cleanup
2600 Blair Stone Road, MS 4535
Tallahassee, FL 32399-2400

The HSWA Permit, SB, and associated administrative file, including the RFI Report, will be available to the public for viewing and copying at:

NASA Document Library
North Brevard Library
2121 South Hopkins Avenue
Titusville, FL 32780
Telephone: (321) 264-5026

To request further information, you may contact one of the following people:

Mr. Harold Williams
Remediation Program Manager
Environmental Program Office
Mail Code: TA-C3
Kennedy Space Center, FL 32899
E-mail: Harold.G.Williams@nasa.gov
Telephone: (321) 867-8411

Mr. John Armstrong
FDEP-Bureau of Waste Cleanup
2600 Blair Stone Road, MS 4535
Tallahassee, FL 32399-2400
E-mail: John.Armstrong@dep.state.fl.us
Telephone: (850) 245-8981

FACILITY DESCRIPTION

NASA established KSC as the primary launch site for the space program. These operations have involved the use of toxic and hazardous materials. Under the RCRA and applicable HSWA permit (Permit No. FL6800014585) issued by the FDEP and/or EPA, KSC was required to perform an investigation to determine the nature and extent of contamination from Solid Waste Management Unit (SWMU) No. 13, the GSA Vehicle Maintenance Facility (Figure 1).

SITE DESCRIPTION AND HISTORY

The GSA VMF site is a NASA-operated facility that consists of four numbered buildings that were constructed between 1966 and 1985 and four unnumbered structures that are used for support operations. The GSA VMF historically was used for vehicle service, maintenance, and fueling operations at KSC. Fueling operations were terminated in 1999. A natural gas facility was constructed at the site in 1994 and is still active, as are propellant refueling, storage, and testing operations. Due to the nature of the previous operations, various chemicals have been used at the facility, including motor oil, hydraulic fluids, transmission fluid, engine coolant, automotive battery acid, solvents, and fuels.

The following is a summary of investigations performed at the GSA VMF:

- 1990-1994: Investigations performed related to ASTs and USTs at the site found no negative environmental impacts.

- 1994: Several investigations were performed at the compressed natural gas service facility at the GSA VMF in support of construction activities. As a result of the investigations, 50 cubic yards of contaminated soil were excavated and disposed of.
- 1995: Investigation was performed in car wash area to identify potential environmental

impacts from previous activities in this area of the site. Activities included soil and groundwater sampling. The results indicated no soil impacts; however, elevated levels of chromium in groundwater were noted.

- 1999: An Environmental Site Assessment (SA) was conducted to determine potential locations and contaminants of concern at the GSA VMF and identify the need, if any, for further study. The SA was followed by the development and implementation of the Confirmatory Sampling Plan.

- 1999-2001: A SWMU Assessment and Confirmatory Sampling were conducted to evaluate impacts to site environmental media. Soil, sediment, groundwater, and surface water samples were collected and various metals, PAHs, and VOCs were identified in site media above regulatory criteria.

- 2001-2003: A RCRA Facility Investigation was conducted. Samples of soil/sediment and groundwater were collected and analyzed. Concentrations of PAHs in the swale along western side of the site exceeded all regulatory criteria. An Interim Measure (IM) is planned to remove the contaminated soil. Results of these analyses were used to evaluate potential risks to human health and ecological receptors. The Preliminary Risk Evaluation (PRE) for human health indicated that groundwater containing VOCs would result in an unacceptable human health risk if the groundwater were used as a source of drinking water. Concentrations of metals and PAHs in site soils pose an unacceptable risk under a residential scenario. The ecological risk assessment (ERA) indicated that no unacceptable risk exists at the site for ecological receptors.

SUMMARY OF SITE RISK

As part of the RFI activities, risk assessments were completed in accordance with KSC's Remediation Team Risk Assessment Decision Process Document (DPD). The ecological risk assessment (ERA) was performed in accordance with the eight-step process described in the EPA's "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments", dated 1997.

Chemicals of Concern (COCs) identified for human health during the RFI included PAHs and heavy metals in soil based on residential cleanup target levels and PAHs and metals in swale soil based on residential and industrial cleanup target levels. For a complete list of COCs in soil and swale soil see Table 1. Following completion of the IM addressing contaminated soil in the western swale, no COCs will be present in swale soil based on the PRE using alternate soil cleanup target levels developed for a groundskeeper. No cancer risks or non-cancer hazards were estimated for current receptors to groundwater because of the lack of exposure pathways for any current use at the site.

The ERA did not identify any unacceptable ecological risks.

WHAT ARE THE REMEDY OBJECTIVES AND LEVELS?

The remedial action objective (RAO) is to protect humans from exposure to soil contaminants that exceed FDEP/EPA residential and industrial-use cleanup target levels by limiting site activities to industrial uses and maintaining site swales.

Table 1 lists the COCs present in soil and swale soil at the GSA VMF. The first column lists the chemical name, the second column lists the range of concentrations in soil and swale soil detected at the GSA VMF site during the RFI, and the last column presents the FDEP/EPA cleanup target level to be achieved at the site. Cleanup target levels are shown for residential, industrial, and alternative (groundskeeper) scenarios.

Table 1. Soil and Swale Soil

Site-Related Chemicals of Concern (COCs)	Range of Detections (mg/kg)	Residential SCTL[1]	Industrial SCTL[1]	Alternative SCTL[2]
Arsenic	0.82-1.7	0.8	3.7	--
Benzo(a)pyrene	0.0198-1.49	0.1	0.5	16
Benzo(b)fluoranthene	0.018-2.24	1.4	4.8	--
Dibenzo(a,h)anthracene	0.031-0.304	0.1	0.5	--
Indeno(1,2,3-cd)pyrene	0.0189-1.87	1.5	5.3	--
Lead	13-420	400	920	--
Vanadium	6.8-20	15	7400	--

[1] Cleanup levels are SCTLs from Florida Administrative Code 62-777

[2] Alternative Cleanup Target Level based on groundskeeper scenario presented in RFI Report

REMEDIAL ALTERNATIVES FOR THE GSA VMF

Because of the low levels of soil contamination present at the GSA VMF, only one remedy was considered for the site.

Land Use Controls (LUCs): Institutional controls will be implemented for soil and swale soil. The institutional controls will: (i) prevent residential exposure to site soils; and (ii) maintain the site use so that the groundskeeper scenario developed in the PRE remains applicable. NASA, EPA and FDEP have entered into a Memorandum of Agreement (MOA), which outlines how institutional controls will be managed at NASA.[2] The MOA requires periodic inspections, condition certification, and agency notification. The area of the site that will be under institutional control is shown on Figure 2.

EVALUATION OF REMEDY

The selected remedy was evaluated to determine if it will comply with EPA's four threshold criteria for corrective measures. The four threshold criteria for corrective measures are:

- overall protection of human health and the environment;
- attain media cleanup standards;
- control the sources of releases; and
- comply with standards for management of wastes.

Land Use Controls meet each of the threshold criteria and was determined by the KSC Remediation Team to be the best overall approach.

WHAT IMPACTS WOULD THE REMEDY HAVE ON THE LOCAL COMMUNITY?

The LUCs described previously will limit the site use so that the groundskeeper scenario remains applicable and exposure to site soils is limited.

2. By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Centerwide, certain periodic site inspections, condition certification, and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.

WHY DOES THE KSC REMEDIATION TEAM RECOMMEND THIS REMEDY?

The team recommends the proposed remedy because the institutional controls will prevent exposure to contaminants prior to the cleanup levels being achieved. The proposed remedy meets the four general standards for corrective measures and was determined to be the best overall approach.

NEXT STEPS

The KSC Remediation Team will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy into KSC's HSWA permit. If the proposed remedy is determined to be appropriate for implementation, then a Land Use Control Implementation Plan will be developed to incorporate the institutional controls at this site.

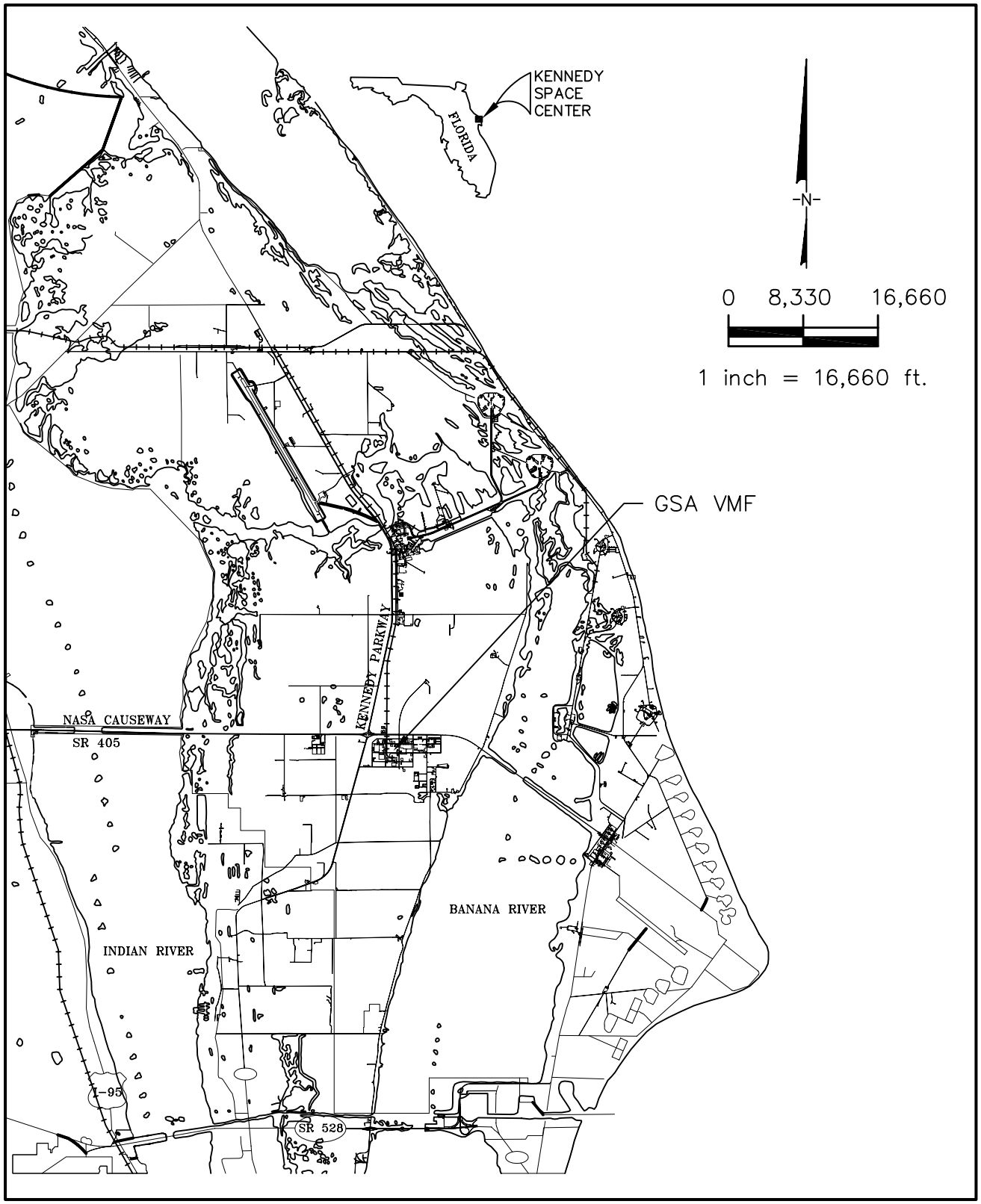

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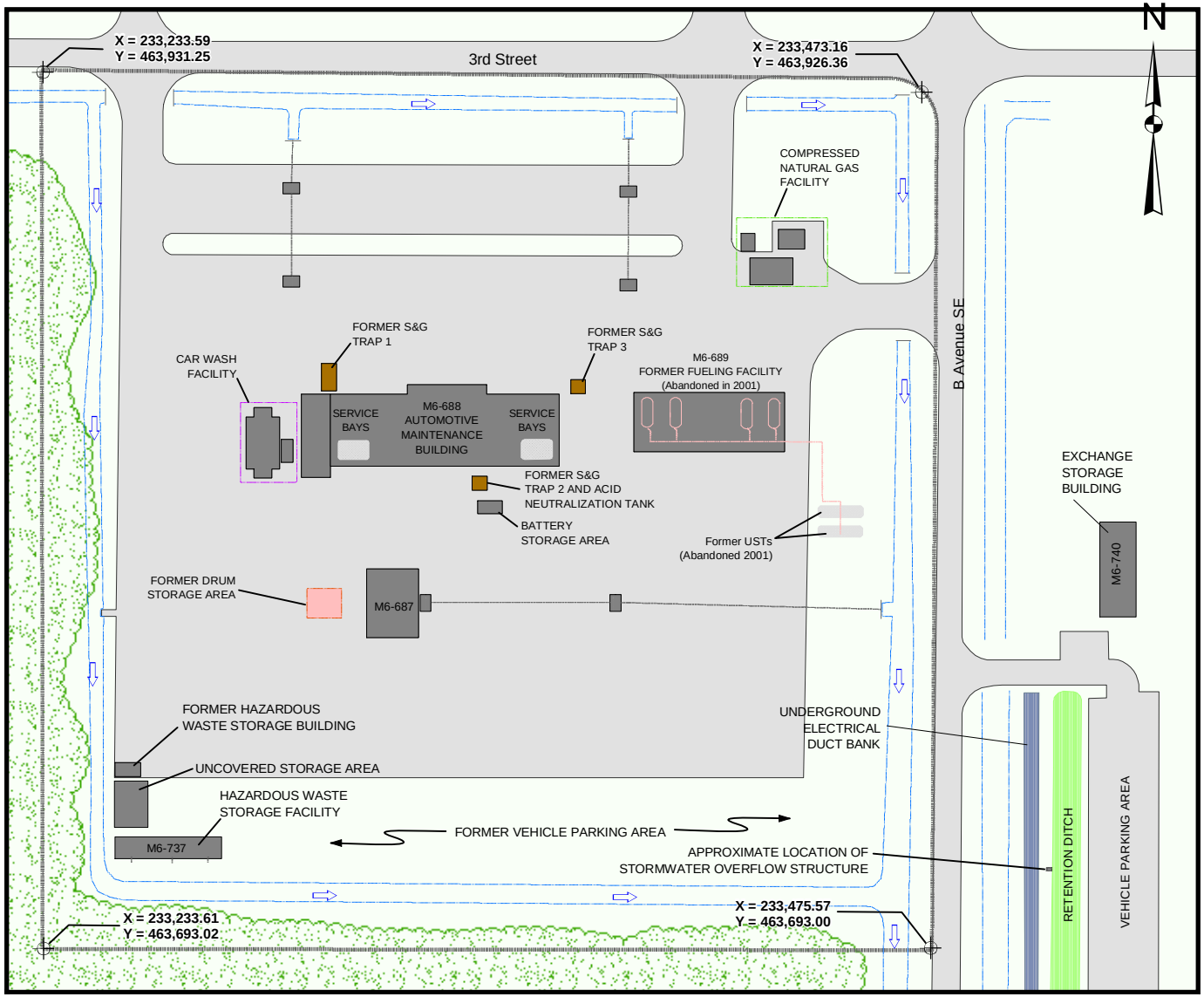
FIGURE 1
SITE LOCATION MAP
GSA VMF



LEGEND

- Drainage Swales
- Compressed Natural Gas Fueling Area (Since 1994)
- Former Drum Storage Area
- Car Wash Facility (Since 1995)
- Headwall/Stormwater Discharge Point
- Underground Drain Pipe
- Former Fuel Islands
- Former Fuel Lines
- Former USTs
- Limits of GSA Facility*
- Underground Electrical Duct Bank
- Depression
- Paved Areas
- Buildings/Open Storage
- Drainage Grates
- Sand & Grease Traps
- Wooded Area
- Surface Water Flow Direction

*Area Covered by Statement of Basic & Soil Use Control Area.

Notes:

1. Dimensions of Former Fuel Underground Storage Tanks & Appurtenances from UST Closure Report, IT Corporation, May 2001.
2. Groundskeeper Scenario Applies to all Drainage Swales Within Dashed Area.
3. Land Use Control for the Swales will Ensure that the Groundskeeper Scenario Assumptions, as Determined in the Risk Assessment Remain Valid.
4. Survey Coordinates are in State Plane Coordinate System NAD 1983 Meters, Florida East.

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Figure 2
Soil Use Control Area
GSA VMF (SWMU #13)